

# POURABLE LIQUID DAIRY DESSERT

## DESCRIPTION

### Technical Field

The invention is an improved pourable dairy dessert product.

### 5 Background of the Invention

Dessert mixes, and particularly those from dairy ingredients, are well known and used both by the average consumer and in the commercial food industry. One such traditional dessert includes a cake soaked with a dairy mix made from a combination of three milks, known as “tres leches.” The customary way of preparing the tres leches mix is through the blending of three  
10 milk products: whole milk, sweetened condensed milk and evaporated milk. Given the required freshness of the product, preparing and storing the traditional tres leches mix to maintain its integrity, is a challenge to commercial-scale food producers and suppliers.

One such commercial product is described in U.S. Patent No. 6,197,362, and its continuation, now U.S. Patent No. 6,569,485, both to Hussein, and assigned to Rich Products  
15 Corporation. The '362 patent and the '485 patent both describe a pourable liquid dessert product comprising a protein source, fat, sweetener, stabilizer, flavoring agent and emulsifier. Both patents state that “[i]t is yet another object of this invention to provide a single pourable dessert liquid product which may be either dairy or non-dairy, is freezable, is consistent in quality and overall improves the sanitary and keeping quality since only a single liquid is used with no  
20 exposure to contamination as in the case of mixing three separate milks.” (Col. 1, lines 41–47).

Both patents describe and claim the following ingredients: protein or protein source, fat, sweetener, stabilizer, flavoring agent and emulsifier. There is no teaching or suggestion in either patent that any of these ingredients can be omitted. Further, the “dairy protein source” listed in

the patents include dried skim milk, whey protein, and milk protein concentrate. There is no teaching or suggestion that the dairy protein source includes whole milk, evaporated milk, or cream as in the original tres leches formula.

However, it has been discovered it is possible to produce on a commercial scale, a dairy-based pourable dessert topping without an emulsifier. The present invention is an improved pourable dairy dessert product, maintaining the taste, texture and integrity of the original dairy-based tres leches product. Even in the absence of an emulsifier, the present product can be frozen and thawed for use, while maintaining the desired characteristics of taste, texture, and soaking ability required of products of this nature.

Accordingly, there is a need for an improved pourable dairy-based dessert product, having taste and texture more authentic to the original “three milk” tres leches product, and prepared without an emulsifier.

### **Summary of the Invention**

According to one aspect of the invention, a pourable dessert product is provided. The dessert product comprises about 4.50–15.0 weight % milk solids nonfat; about 1.0–15.0 weight % fat; about 10.0–25.0 weight % sweetener; about 0.10–0.30 weight% stabilizer and about 0.1–2.0 weight % flavoring agents.

In another aspect of the invention, a liquid dairy mix composition without an emulsifier, is provided. The liquid mix composition comprises about 4.50–15.00% milk solids nonfat; about 1.0–15.0 weight % fat; about 10.0–25.0 weight % sweetener; about 0.10–0.30 weight % stabilizer and about 0.1–2.0 weight % flavoring agents.

### **Detailed Description**

There are many possible embodiments of this invention. The description below describes in detail a preferred embodiment of the invention. It should be understood that the present disclosure is to be considered as an example of the principles of the invention. The disclosure is not intended to limit the broad aspect of the invention to the embodiments illustrated.

The present invention is directed to a dairy-based, pourable dessert product, and more specifically, a liquid mix for creation of the cake known as “tres leches.” The pourable dessert product is made up of fat, milk solids nonfat, sweetener, stabilizer and flavoring agent, but eliminates the need for an emulsifier.

The amount of milk solids nonfat in the dessert product should be about 4.50–15.00 weight %, and preferably about 8.5 weight %. Examples of suitable sources of milk solids nonfat include cream, milk, whey powder, condensed skim milk, sweetened condensed milk, whole milk powder, evaporated milk, nonfat dry milk, or buttermilk powder. The preferred dairy sources are milk, nonfat dry milk, condensed skim milk, cream, and whey powder.

The amount of fat in the dessert product should be about 1.0–15.0 weight %, preferably about 6.0 weight %. The origin of the fat is also dairy fat, with butterfat being the preferred ingredient in the composition. Potential sources of butterfat include cream, milk, whole milk powder, evaporated milk, and sweetened condensed milk, with cream and milk being the preferred sources.

The amount of sweetener should be about 10–25 weight %, preferably about 15.5 weight %. Examples of sweeteners include corn syrup, sucrose, fructose, high fructose corn syrup, dextrose, maltodextrin, invert sugar, lactose, maltitol, or sorbitol. Preferred sweeteners include sucrose and corn syrup.

The amount of stabilizer should be about 0.1–0.3 weight %, preferably 0.20 weight %. Examples of stabilizers include carageenan, guar gum, locust bean gum, xanthum gum, cellulose, modified cellulose and hydrocolloids. Preferred stabilizers include carrageenan and carboxymethyl cellulose.

5           The amount of flavoring agent should be about 0.1–2.0 weight %, preferably about 0.6 weight %. Examples of flavoring agents include conventional flavoring agents such as caramel, vanilla, kahlua, coffee, mocha, raspberry, strawberry, citrus fruits, and liqueur flavor. A preferred flavoring is caramel.

10           It is contemplated that the pourable liquid dessert of the present invention will be used in the creation of a “tres leches” cake. The tres leches cake is traditionally created using a sponge type cake, over which the liquid mix is poured and thus allowed to soak into but not completely through the cake. Therefore, to achieve the flavor, texture and soaking characteristics required of the tres leches mix, the present formulation is, like the traditional mixture, a dairy-based mixture. The present formulation also does not require an emulsifier, an ingredient required in many non-  
15   dairy based mixtures made with non-dairy ingredients, such as vegetable oil.

The dessert product may be manufactured and/or packaged in group or single portions. The dessert product may be frozen, stored, distributed, and thawed for subsequent use and consumption.

20           The dessert product may be prepared by conventional methods, including regular pasteurization (LTLT, HTST), Extended Shelf Life (ESL), Ultra High Temperature (UHT) and in-container sterilization.

In one embodiment, the liquid dessert mix is prepared as a liquid mixture. Corn syrup, sucrose syrup and milk are added to a blending vat, and blended using a liquefier at high speed.

Powdered ingredients, such as nonfat dry milk, whey powder, and other ingredients, including stabilizer, salt, flavoring and coloring are dispersed into the liquid. Once the powders are completely blended into the milk-sugar mixture, the mixture is transferred into a holding vat. The remaining sucrose syrup, milk and cream are surged through the blending vat to the holding vat.

5 The entire batch is agitated on medium speed for five minutes to ensure a uniform mixture. The mixture is pasturized in an HTST pasteurizer by heating the mix to 178 F to 182 F for 25-35 seconds. Homogenization is performed at pressures between 200 and 5000 psig, with about 1500 psig being preferred, to prevent fat from agglomerating, coagulating or separating. The mixture is cooled using the cooling section of the homogenizer unit from the pasteurization temperature  
10 of 178 F–182 F to 35 F–40 F over a time period of 30–60 seconds. The resulting mixture can be frozen, stored, distributed and thawed, while maintaining the ideal characteristics of a pourable liquid texture and blended consistency with adequate soak times.

Nonlimiting examples of the invention are provided below. Example 1 is of the preferred embodiment.

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EXAMPLE 1  
Formulation of Dairy Pourable Dessert Products  
Batch Size: 1000 gallons (9148 lbs)

<u>Ingredients</u>		<u>Required Amount (lbs)</u>	<u>Weight % (solids basis)</u>
Cream	40% butterfat	858.00	6.0% butterfat
	5.6% msnf		
Milk	3.5% butterfat	5875.00	
	8.6% msnf		
Nonfat Dry Milk	0.3% butterfat	43.00	6.5% msnf
	96.0% msnf		
Liquid Sucrose	67.5% solids	1863.00	13.75
Corn Syrup, 42 DE	80.3% solids	199.00	1.75
Whey Powder		200.00	2.09
Stabilizer 8514-500		22.86	0.25
Sodium Acid Pyrophosphate		4.57	0.05

	Salt		18.30	0.20
	Caramel	70.5% solids	54.00	0.60
	Caramel Flavor		9.97	0.07
	Butterscotch Flavor		3.66	0.07
5	Annatto Color		0.27	0.003
	Caramel Color		0.27	0.003

EXAMPLE 2 (highest protein level)  
Formulation of Dairy Pourable Dessert Products  
Batch Size: 1000 gallons (9388 lbs)

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	<u>Ingredients</u>		<u>Required Amount (lbs)</u>	<u>Weight % (solids basis)</u>
15	Cream	40% butterfat 5.6% msnf	940.00	6.0% butter fat
	Milk	3.5% butterfat 8.6% msnf	5275.00	
20	Nonfat Dry Milk	0.3% butterfat 96.0% msnf	939.50	15.0% msnf
	Liquid Sucrose	67.5% solids	1912.00	13.75
	Corn Syrup, 42 DE	80.3% solids	204.50	1.75
	Whey Powder		—	—
	Stabilizer 8514-500		23.47	0.25
25	Sodium Acid Pyrophosphate		4.69	0.05
	Salt		18.78	0.20
	Caramel	70.5% solids	55.40	0.60
	Caramel Flavor		10.23	0.07
	Butterscotch Flavor		3.76	0.07
30	Annatto Color		0.28	0.003
	Caramel Color		0.28	0.003

EXAMPLE 3 (highest fat level)  
Formulation of Dairy Pourable Dessert Products  
Batch Size: 1000 gallons (9044 lbs)

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	<u>Ingredients</u>		<u>Required Amount (lbs)</u>	<u>Weight % (solids basis)</u>
40	Cream	40% butterfat 5.6% msnf	3070.50	15.0% butterfat
	Milk	3.5% butterfat 8.6% msnf	3655.20	
	Nonfat Dry Milk	0.3% butterfat 96.0% msnf	166.5	7.15% msnf
45	Liquid Sucrose	67.5% solids	1842.00	13.75

	Corn Syrup, 42 DE	80.3% solids	197.00	1.75
	Whey Powder		—	—
	Stabilizer 8514-500		22.61	0.25
	Sodium Acid Pyrophosphate		4.52	0.05
5	Salt		18.09	0.20
	Caramel	70.5% solids	53.36	0.60
	Caramel Flavor		9.86	0.07
	Butterscotch Flavor		3.62	0.07
	Annatto Color		0.27	0.003
10	Caramel Color		0.27	0.003

EXAMPLE 4 (lowest protein)  
Formulation of Dairy Pourable Dessert Products  
Batch Size: 1000 gallons (8995 lbs)

15	<b><u>Ingredients</u></b>		<b><u>Required Amount (lbs)</u></b>	<b><u>Weight % (solids basis)</u></b>
	Cream	40% butterfat	994.00	6.0% butterfat
20		5.6% msnf		
	Milk	3.5% butterfat	4059.00	4.5% msnf
		8.6% msnf		
	Water		1801.30	
	Liquid Sucrose	67.5% solids	1832.00	13.75
25	Corn Syrup, 42 DE	80.3% solids	196.00	1.75
	Whey Powder		—	—
	Stabilizer 8514-500		22.49	0.25
	Sodium Acid Pyrophosphate		4.50	0.05
	Salt		17.99	0.20
30	Caramel	70.5% solids	53.10	0.60
	Caramel Flavor		9.80	0.07
	Butterscotch Flavor		3.60	0.07
	Annatto Color		0.27	0.003
	Caramel Color		0.27	0.003

EXAMPLE 5 (lowest fat)  
Formulation of Dairy Pourable Dessert Products  
Batch Size: 1000 gallons (9117 lbs)

40	<b><u>Ingredients</u></b>		<b><u>Required Amount (lbs)</u></b>	<b><u>Weight % (solids basis)</u></b>
	Milk	3.5% butterfat	2566.40	1.0% butterfat
		8.6% msnf		
45	Nonfat Dry Milk	0.3% butterfat	449.00	7.15% msnf
		96.0% msnf		

	Water		3932.3	
	Liquid Sucrose	67.5% solids	1857.00	13.75
	Corn Syrup, 42 DE	80.3% solids	199.00	1.75
	Whey Powder		—	—
5	Stabilizer 8514-500		22.79	0.25
	Sodium Acid Pyrophosphate		4.56	0.05
	Salt		18.23	0.20
	Caramel	70.5% solids	53.80	0.60
	Caramel Flavor		9.94	0.07
10	Butterscotch Flavor		3.65	0.07
	Annatto Color		0.27	0.003
	Caramel Color		0.27	0.003

EXAMPLE 6 (lowest sugars)

15 Formulation of Dairy Pourable Dessert Products  
Batch Size: 1000 gallons (8899 lbs)

	<u>Ingredients</u>		<u>Required Amount (lbs)</u>	<u>Weight % (solids basis)</u>
20	Cream	40% butterfat 5.6% msnf	745.00	6.0% butterfat
	Milk	3.5% butterfat 8.6% msnf	6741.20	
25	Nonfat Dry Milk	0.3% butterfat 96.0% msnf	15.46	7.15% msnf
	Liquid Sucrose	67.5% solids	1121.00	8.50
	Corn Syrup, 42 DE	80.3% solids	166.00	1.50
	Whey Powder		—	—
30	Stabilizer 8514-500		22.25	0.25
	Sodium Acid Pyrophosphate		4.45	0.05
	Salt		17.80	0.20
	Caramel	70.5% solids	52.51	0.60
	Caramel Flavor		9.70	0.07
35	Butterscotch Flavor		3.56	0.07
	Annatto Color		0.27	0.003
	Caramel Color		0.27	0.003

EXAMPLE 7 (highest sugars)

40 Formulation of Dairy Pourable Dessert Products  
Batch Size: 1000 gallons (9458 lbs)

	<u>Ingredients</u>		<u>Required Amount (lbs)</u>	<u>Weight % (solids basis)</u>
45	Cream	40% butterfat	1004.00	6.0% butterfat



	Milk	5.6% msnf 3.5% butterfat	4722.4	
		8.6% msnf		
5	Nonfat Dry Milk	0.3% butterfat 96.0% msnf	222.84	7.15% msnf
	Liquid Sucrose	67.5% solids	2802.50	20.00
	Corn Syrup, 42 DE	80.3% solids	589.00	5.00
	Whey Powder		—	—
	Stabilizer 8514-500		23.65	0.25
10	Sodium Acid Pyrophosphate		4.73	0.05
	Salt		18.92	0.20
	Caramel	70.5% solids	55.80	0.60
	Caramel Flavor		10.31	0.07
	Butterscotch Flavor		3.78	0.07
15	Annatto Color		0.28	0.003
	Caramel Color		0.28	0.003

EXAMPLE 8 (lowest stabilizer)  
Formulation of Dairy Pourable Dessert Products  
Batch Size: 1000 gallons (9091 lbs)

	<u>Ingredients</u>		<u>Required Amount (lbs)</u>	<u>Weight % (solids basis)</u>
25	Cream	40% butterfat 5.6% msnf	836.60	6.0% butterfat
	Milk	3.5% butterfat 8.6% msnf	6015.40	
	Nonfat Dry Milk	0.3% butterfat 96.0% msnf	89.40	7.15% msnf
30	Liquid Sucrose	67.5% solids	1851.80	13.75
	Corn Syrup, 42 DE	80.3% solids	198.10	1.75
	Whey Powder		—	—
	Stabilizer 8514-500		9.09	0.10
35	Sodium Acid Pyrophosphate		4.55	0.05
	Salt		18.18	0.20
	Caramel	70.5% solids	53.64	0.60
	Caramel Flavor		9.91	0.07
	Butterscotch Flavor		3.64	0.07
40	Annatto Color		0.27	0.003
	Caramel Color		0.27	0.003

EXAMPLE 9 (highest stabilizer)  
Formulation of Dairy Pourable Dessert Products  
Batch Size: 1000 gallons (9098 lbs)

5	<u>Ingredients</u>		<u>Required Amount (lbs)</u>	<u>Weight % (solids basis)</u>
	Cream	40% butterfat 5.6% msnf	839.20	6.0% butterfat
10	Milk	3.5% butterfat 8.6% msnf	5998.30	
	Nonfat Dry Milk	0.3% butterfat 96.0% msnf	91.30	7.15% msnf
	Liquid Sucrose	67.5% solids	1853.30	13.75
15	Corn Syrup, 42 DE	80.3% solids	198.25	1.75
	Whey Powder		—	—
	Stabilizer 8514-500		27.29	0.30
	Sodium Acid Pyrophosphate		4.55	0.05
	Salt		18.20	0.20
20	Caramel	70.5% solids	53.68	0.60
	Caramel Flavor		9.92	0.07
	Butterscotch Flavor		3.64	0.07
	Annatto Color		0.27	0.003
	Caramel Color		0.27	0.003
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EXAMPLE 10 (lowest flavor)  
Formulation of Dairy Pourable Dessert Products  
Batch Size: 1000 gallons (9079 lbs)

30	<u>Ingredients</u>		<u>Required Amount (lbs)</u>	<u>Weight % (solids basis)</u>
	Cream	40% butterfat 5.6% msnf	830.90	6.0% butterfat
35	Milk	3.5% butterfat 8.6% msnf	6061.40	
	Nonfat Dry Milk	0.3% butterfat 96.0% msnf	84.75	7.15% msnf
	Liquid Sucrose	67.5% solids	1849.50	13.75
40	Corn Syrup, 42 DE	80.3% solids	197.84	1.75
	Whey Powder		—	—
	Stabilizer 8514-500		22.70	0.25
	Sodium Acid Pyrophosphate		4.54	0.05
	Salt		18.16	0.20
45	Caramel	70.5% solids	—	—
	Caramel Flavor		9.08	0.10

Butterscotch Flavor	—	—
Annatto Color	0.27	0.003
Caramel Color	0.27	0.003

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EXAMPLE 11 (highest flavor)  
Formulation of Dairy Pourable Dessert Products  
Batch Size: 1000 gallons (9127 lbs)

	<u>Ingredients</u>	<u>Required Amount (lbs)</u>	<u>Weight % (solids basis)</u>
10			
	Cream                      40% butterfat	853.30	6.0% butterfat
	5.6% msnf		
	Milk                        3.5% butterfat	5885.50	
15	8.6% msnf		
	Nonfat Dry Milk        0.3% butterfat	102.75	7.15% msnf
	96.0% msnf		
	Liquid Sucrose        67.5% solids	1859.20	13.75
	Corn Syrup, 42 DE    80.3% solids	198.90	1.75
20	Whey Powder	—	—
	Stabilizer 8514-500	22.82	0.10
	Sodium Acid Pyrophosphate	4.56	0.05
	Salt	18.25	0.20
	Caramel                70.5% solids	181.25	1.40
25	Caramel Flavor	—	—
	Butterscotch Flavor	—	—
	Annatto Color	0.27	0.003
	Caramel Color	0.27	0.003

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**Required Equipment**

HTST Pasteurizer  
Homogenizer  
1000 gallon holding vat, with agitation  
500 gallon blending vat with high speed agitation (liquefier)

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